

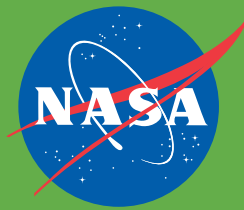
Welcome to the Innovative Partnerships Program (IPP) newsletter for NASA's Langley Research Center! Our IPP team is here to help you promote your technologies, expertise, and facilities for new applications. Whether those applications are within or outside NASA, in traditional or nontraditional markets, we can provide excellent business development support and marketing research studies to find the right targets. We can work with you to consider the patenting and licensing options for your technology. Together, we can find opportunities to advance the maturity of your technology through collaborations with small businesses. In short, our goal is to support the transfer of your technology and capabilities to others. In our newsletters, we'll highlight the different ways that we can support you. If you have any comments or questions, please let us know. Contact us to see how the IPP team can help: [e-mail us](#), call x-41178, or visit us online. ■



Meet Langley's IPP team (left to right): Seated are Sebrenna Young, Eric Vitug, Monica Barnes, and Marva Mabry. Standing are John Franke, Sheri Beam, Tim Allen, Kate Kvaternik, Robert L. Yang, Kathy Dezem, Beth Plentovich, and Sandra Pretlow. Not pictured: Kimberly Graupner and Rheel Turcotte.



Beth Plentovich  
Chief, Innovative Partnerships Program



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NASA's Langley  
Research Center

## Spotlight on SBIR/STTR

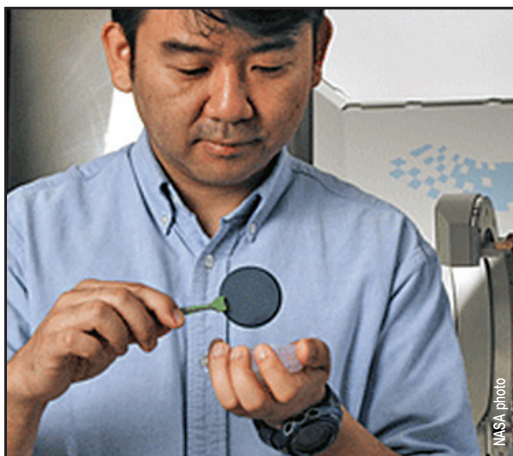
On page 2, you'll find a couple of articles that feature Langley's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. If you're not familiar with these programs, you may want to take a closer look at the articles to read just how beneficial they are to the center.

Authorized by Congress, the SBIR/STTR programs provide opportunities for small businesses to participate in research and development, to increase employment, and to improve U.S. competitiveness. The SBIR/STTR programs touch all NASA mission directorates, and every year Langley awards several contracts in each of its core competency areas to meet technology gaps. Through these contracts, we are able to bring in partners to help advance the proposed innovations and transition their resulting technologies, products, and services into NASA programs and other markets.

If you would like to learn more or have any comments about how we might improve our SBIR and STTR Programs, we'd like to hear from you. Contact program manager [Robert L. Yang](#) (x-49104), technology infusion manager [Kimberly Graupner](#) (x-48618), or program administration specialist [Kate Kvaternik](#) (x-48314). ■

## R&D 100 Win for Rhombohedral Lattice-Matched SiGe

A semiconductor material for microelectronic chipset application that dramatically increases the charge mobility of silicon-germanium (SiGe) has been honored with a 2009 R&D 100 Award from R&D Magazine. As the first technology in the world to exhibit charge mobility higher than 2,000 cm<sup>2</sup>/V-s, this innovation also led to the discovery of the Rhombohedral Hybrid Bandgap Engineering Model that enables the fabrication of thousands of new alloys and millions of new device structures. IPP congratulates inventors Dr. Sang H. Choi, Dr. Yeonjoon Park, Glen C. King, and James R. Elliott on this achievement. ■



Dr. Yeonjoon Park examines the award-winning technology.

SBIR/STTR NEWS

## SBIR/STTR Reviews

### *Making It Easier to Find the Technologies You Need*

For more information about upcoming SBIR/STTR reviews, contact [Kimberly Graupner](#)

If Langley was investing \$66 million a year in research and development to solve the agency's technical challenges, wouldn't you want to know about the innovations that emerge from that R&D? Well, that investment is happening through NASA's SBIR/STTR\* programs. And now—thanks to new efforts by IPP—finding out about those innovations is easy.

Approximately once a month, IPP's Kimberly Graupner schedules meetings between SBIR/STTR companies, their COTR†, and relevant program/project personnel to review the small businesses' progress. At these meetings, which occur face-to-face, via teleconference, or by WebEx, participants also discuss NASA's needs for the SBIR/STTR technologies.

"These meetings are helpful for everyone," said Ms. Graupner. "COTRs get a better understanding of the technology's readiness level. Other Langley personnel hear about new technologies for their projects and programs. And the feedback helps companies prepare proposals that truly address NASA needs."

In some cases, one-on-one meetings are held with an SBIR company representative and Langley personnel. For example, in November, personnel from the Aeronautics Test Program (ATP) met with an SBIR company working on wind tunnel flow quality test and analysis procedures.

IPP also arranges for more open forums for program/project personnel to learn about SBIR/STTR technologies. For example, on December 2nd, a booth in the cafeteria hosted an SBIR company that is developing technologies related to science topics.

"It's not a one-size-fits-all approach," explained Ms. Graupner. "Whether we do a small meeting or a bigger event depends on the technology area and the relevant mission—or missions. Our goal is to make Langley's program and project personnel aware of the great technologies that are available to them." ■

\*SBIR/STTR: Small Business Innovation Research and Small Business Technology Transfer. For more information, see <http://sbir.nasa.gov>.

†COTR: Contracting officer's technical representative

## SBIR Commercialization Success

### *Making Aviation Safer with Innovative Cockpit Displays*

For more information, contact [Kimberly Graupner](#)

After two phases of SBIR contracts and an additional \$4 million from the Advanced General Aviation Transport Experiments (AGATE) program's "Highway in the Sky" project, Oregon-based AvroTec has successfully introduced an innovative affordable head-mounted pilot information system in the commercial marketplace. Known as the FlightMonitor FMP 300, AvroTec's moving map display brings large-format, glass-cockpit capabilities to general aviation aircraft, such as the Lancair Columbia 300. The product provides pilots with direct access to all the information needed for safe air travel. ■

## A Gateway to Langley Technology

<http://technologygateway.nasa.gov>



The Technology Gateway is an appropriate name for the Langley IPP Web site. Located at <http://technologygateway.nasa.gov> and accessible to internal and external visitors, the site provides easy links to Langley's cutting-edge technologies, state-of-the-art facilities, and details about working with Langley researchers.

Part of what sets the Gateway apart is its many multimedia offerings. Short videos describe "Hallmarks of Success"—that is, technologies successfully developed in collaboration with other government partners, small and large businesses, and various research institutions. These engaging stories serve as role models for potential new partners.

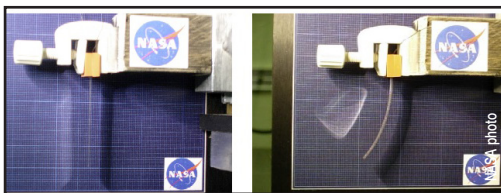
Another useful feature is the "document preview" tool that allows site visitors to view digital documents online in a simulated page-turning environment before downloading the PDF files.

Breaking news is offered via The TechGate Wire, and an online questionnaire is available for those seeking more information about a specific technology. So if you haven't seen it lately, check out The Technology Gateway. ■

# Licensing Successes for FY09



Wireless sensor inventors (left to right) Stanley E. Woodard, Qamar A. Shams, and Bryant D. Taylor.



Side views of bending actuation of electro-active polymer without (left) and with (right) an electric field.

Langley's IPP is proud to announce the transfer of 11 patented technologies via license agreements to two companies, signed in September 2009. "These companies definitely recognized the value of Langley's technology," said IPP's Kathy Dezern. "We look forward to seeing these technologies take on new life in the commercial marketplace."

IPP particularly appreciates the contributions of the inventors, not only for their technology development but also for helping the companies work successfully with those innovations. "Our inventors worked very well with the companies during agreement development, which was extremely helpful," remarked Ms. Dezern. "And they are willing to provide ongoing support to the licensees via reimbursable Space Act Agreements, which is good for the companies and for Langley." ■

<b>Technology</b>	Electroactive sensing/actuating carbon nanotube polymer composites portfolio
<b>Inventors</b>	Zoubeida Ounaies, Cheol Park, Nancy Holloway, Gregory Draughon, and Joycelyn Harrison
<b>Technology</b>	Wireless sensor technology portfolio
<b>Inventors</b>	Stanley E. Woodard, Bryant D. Taylor, Qamar A. Shams, and Robert G. Bryant

## FY09 Tech Transfer Metrics: How We Measure Up

For more information, contact [Kathy Dezern](#)

Technologies	
<b>New Technology Reports (NTRs)</b>	<b>124</b>
<b>Patents*</b>	
Nonprovisional applications	45
Provisional applications	19
Patents issued	19
Commercialization	
<b>License Agreements</b>	
Signed agreements	2 agreements for 11 technologies
Ongoing negotiations	5
<b>Royalty income</b>	<b>\$522,822</b>
Other Agreements	
<b>Space Act Agreements</b>	<b>79</b>
(see table at right)	
<b>Software Usage Agreements</b>	<b>273</b>

\*A provisional patent application, which is less expensive and cumbersome to apply for than a full nonprovisional patent application, protects the invention for 1 year, at which point the nonprovisional is filed or patenting efforts are abandoned.

## New Partnerships and Other Space Act Agreements

For more information, contact [Laura Eure](#)

Over the past several months, a number of partnership agreements have been signed that will enable the center to collaborate on research and development projects in various areas.

Focus
Wing thermal protection system design for future space operations vehicles
Fatigue crack growth rate to quantify residual stress in friction stir weld
Research into durable bonded joints
Computational design studies for low-boom supersonic aircraft
Wear and friction properties of materials for designs related to airframe impact during landing
Hot exhaust model testing in low-speed aeroacoustic wind tunnel



# Awards from NASA's Inventions and Contributions Board: A Year in Review

For more information, contact [Sebrenna Young](#)

FY09 was a very good year for more than 300 inventors at Langley, who received a total of more than \$190,000 in awards from NASA's Inventions and Contributions Board (ICB).

NASA's ICB is tasked with selecting and distributing financial awards for technologies that have enhanced the nation's space program and the individual citizen's quality of life. One of the board's most

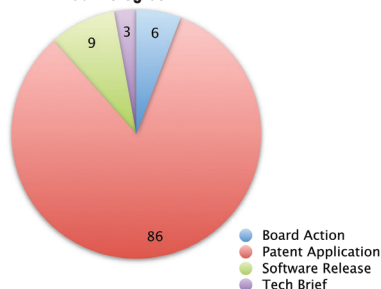
prestigious honors is the Commercial Invention of the Year Award, given this year to Roberto Cano, Brian Jensen, and Erik Weiser of Langley, and Miguel Vazquez of Polyumac Techno-Core, Inc. Their invention, PETI-330, is a high-performance resin for lightweight and fire-resistant polyimide foam



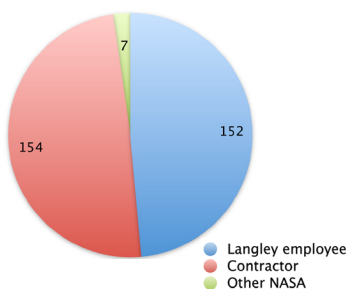
From left to right: Erik Weiser, Roberto Cano, and Brian Jensen with samples of the polyimide foam that won the 2007 NASA Commercial Invention of the Year.

insulation materials that can be formed into a variety of shapes. Licensed by New York-based Ube America Inc. for future use in commercial airplanes, the technology originally was developed as a thermal insulator for reusable launch vehicles. The charts below provide more information about the ICB awards received in FY09 for Langley technologies. ■

Which ICB Awards Did Langley Technologies Win?



Who Won the ICB Awards?



## Inventor's Corner: Rob Bryant Takes Advanced Materials to Heart

When Robert G. Bryant, PhD discovered the award-winning polymer now known as Langley Research Center's Soluble Imide (LaRC-SI), he never dreamed it would be saving lives. But that is exactly what this tough, lightweight, and solvent- and temperature-resistant thermoplastic is doing as part of cardiac resynchronization therapy (CRT) device.

LaRC-SI was licensed to Medtronic Inc. in 2004 as insulation for its new Attain Ability® left-heart lead for CRT devices, approved by the U.S. Food and Drug Administration in April 2009. Much collaboration occurred during testing and evaluation of the left-heart lead, with Medtronic scientists providing insights on material requirements and processing, while Dr. Bryant shared details about LaRC-SI's properties. Medtronic's product consists of thin metal wires insulated with LaRC-SI that are placed in the heart's left ventricle, coordinating the contraction of the two lower chambers and improving the heart's pumping efficiency.

Dr. Bryant is pleased with the second life of his discovery, noting that "[LaRC-SI] is an excellent example of how taxpayer investment in NASA materials research has resulted in a direct benefit beyond the aerospace sector." ■

Attain Ability is a registered trademark of Medtronic Inc.



Dr. Rob Bryant examines a laboratory model of a CRT device that is insulated with his LaRC-SI thermoplastic.

## NASA's Inventions and Contributions Board Awards

**Patent Application Award:** Awarded on receipt of a patent application serial number; \$1,000 for a sole inventor or \$500 each for multiple inventors

**Software Release Award:** Awarded when software is initially released by the center's Software Release Program to a qualified user for internal or external projects; \$1,000 for a sole inventor or \$500 each for multiple inventors

**Tech Brief Award:** Awarded when an article is approved for publication in the *NASA Tech Briefs* magazine; \$350 per inventor

**Board Action Award:** An award, up to \$100,000, based on such factors as the invention's significance; its stage of development; its actual use by NASA, the government, or industry; its potential for such use; and the level of creativity involved in making it

## About Langley IPP News

Published by the Innovative Partnerships Program at NASA's Langley Research Center, this newsletter provides Langley personnel with information about the center's latest innovations as well as partnerships and other agreements to develop new technologies. Please give us your thoughts and feedback.

Innovative Partnerships Program

864-1178

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